

NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD

IRRIGATION EROSION CONTROL (POLYACRYLAMIDE)

(acres)

CODE 716 CA INTERIM

DEFINITION

The addition of polyacrylamide to irrigation water.

PURPOSES

To minimize or control irrigation induced soil erosion.

CONDITIONS WHERE PRACTICE APPLIES

On corrugation or furrow irrigation lands susceptible to irrigation induced erosion. This practice does not apply to peat soils or where irrigation waters exceed a sodium adsorption ration (SAR) of 15.

CRITERIA

The polyacrylamide (PAM) will be of the anionic type meeting EPA and FDA acrylamide monomer limits, and shall be applied according to the labeling of the product for this use. Use shall conform to all federal, state, and local laws, rules, and regulations.

PAM will be used during the first irrigation after soil disturbance (Pre-irrigation is considered irrigation).

PAM will be added to irrigation water only during the advance phase of the irrigation. The advance phase will be considered to be from the time irrigation starts until water has advanced to the end of the furrows or corrugations.

The concentration of PAM in irrigation water applied shall not exceed 10ppm. Premixed stock solutions are encouraged. Mixing of and/or application of materials shall be in accordance with the manufacturers' recommendations.

CONSIDERATIONS

Other conservation treatments such as land leveling, irrigation water management, reduced tillage, crop rotations, etc. should be used in conjunction with this practice to control irrigation induce erosion.

Adjustment of the concentrations downward from 10 ppm may be used so long as no visible erosion occurs.

Secondary applications on untilled furrows may be needed but may not require as high a rate as the first application.

Where reasonably possible, the tailwater containing PAM should be used on other fields (or stored for a future irrigation).

PAM is a flocculating agent which can cause deposition in canals, laterals, head ditches, pipelines, furrows, or other locations where it comes in contact with sediment laden waters. Down stream deposition from the use of PAM may require frequent cleaning to maintain normal functions.

The advance rate can vary greatly between hard rows (Wheel packed) and soft rows. Both PAM application and irrigation water management would benefit from treating these differences appropriately.

Consider the impacts of increases in infiltration of up to approximately 15 % when PAM is applied.

Safety and Health

Consider proper health and safety precautions according to the label and industry guidelines. If inhaled in large, PAM dust can cause choking and difficult breathing. A dust mask of a type recommended by the manufacturer should be used by persons handling and mixing PAM. PAM solutions can cause surfaces, tools, etc to become very slippery when wet.

Water Quantity

1. Effects on water budget components, especially relationships between runoff and infiltration.
2. The effect of changes in the water table on the rooting depth for anticipated land uses.

Water Quality

1. Downstream effects of erosion and yields of sediment and sediment-attached substances.
2. Effects on the salinity of the soil in the drained field.
3. Effects on the loadings of dissolved substances downstream.
4. Potential changes in downstream water temperature.

Endangered Species Considerations

Determine if installation of this practice with any others proposed will have any effect on any federal or state listed Rare, Threatened or Endangered species or their habitat. NRCS's objective is to benefit these species and others of concern or at least not have any adverse effect on a listed species. If the Environmental Evaluation indicates the action may adversely affect a listed species or result in adverse modification of habitat of listed species which has been determined to be critical habitat, NRCS will advise the land user of the requirements of the Endangered Species Act and recommend alternative conservation treatments that avoid the adverse effects. Further assistance will be provided only if the landowner selects one of the alternative conservation treatments for installation; or at the request of the landowners, NRCS may initiate consultation with the Fish and Wildlife Service, National Marine Fisheries Service and/or California Department of Fish and Game. If the Environmental Evaluation indicates the action will not affect a listed species or result in adverse modification of critical habitat, consultation generally will not apply and usually would not be initiated. Document any special considerations for endangered species in the Practice Requirements Worksheet.

PLANS AND SPECIFICATIONS

Specification will be developed site specifically for each application. Specifications for this practice will be prepared for each field or treatment unit according to be criteria, considerations, and operation and maintenance described in this standard. Specifications shall consist of approved specifications, job sheets, and narrative statements on the Practice Requirement sheet.

Specification Guide

Follow sound irrigation water management principles.

- * Generally infiltration increase (about 15%) when polyacrylamide is used. Stream sizes may need to be increased to keep the same balance between infiltration and runoff.
- * Where stream sizes have been restricted due to excess soil movement in the past, it may be possible to increase the flows to provide a better infiltration / runoff balance.
- * For the most uniform water application, advance streams containing polyacrylamide should reach the end of the field in the first 20 to 35 percent of the total set time.

Based upon soils, slope, and stream size, the necessary concentration of polyacrylamide may be reduced. For the best and most economic concentration, back off on the amount of polymer used until soil movement is noted, then increase slightly.

Lack of adequate turbulence is generally indicated by jellying and deposition of polymer material downstream of the application point.

OPERATION AND MAINTENANCE

Irrigations will be monitored and the PAM applications to irrigation waters will be discontinued when the advance phase has been completed.

All equipment will be operated and maintained to provide the uniform application rates as listed in Criteria (and as specifically stated in Practice Requirement sheet provided to the user). Rinse all equipment used to mix and apply PAM thoroughly with water to avoid formation of intractable PAM residues.